SEQUENCE LISTING

<110> Currie, Mark G.
      Mahajan-Miklos, Shalina

<120> METHODS AND COMPOSITIONS FOR THE
      TREATMENT OF GASTROINTESTINAL DISORDERS

<130> 14184-043001

<140> US 10/796,719
<141> 2004-03-09

<150> US 10/766,735
<151> 2004-01-28

<150> US 60/443,098
<151> 2003-01-28

<150> US 60/471,288
<151> 2003-05-15

<150> US 60/519,460
<151> 2003-11-12

<160> 149

<170> FastSEQ for Windows Version 4.0

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Asn Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Thr
1   5   10   15
Gly Cys Tyr

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<213> Escherichia coli

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Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Ala Gly
1   5   10   15
Cys Tyr

<210> 3
<211> 18
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<213> Escherichia coli

<400> 3
Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys Tyr Pro Ala Cys Ala Gly
 1   5   10   15
Cys Asn

<210> 4
<211> 18
<212> PRT
<213> Citrobacter freundii

<400> 4
Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Ala Gly
 1   5   10   15
Cys Tyr

<210> 5
<211> 30
<212> PRT
<213> Yersinia enterocolitica

<400> 5
Gln Ala Cys Asp Pro Pro Ser Pro Pro Ala Glu Val Ser Ser Asp Trp
 1   5   10   15
Asp Cys Cys Asp Val Cys Cys Asn Pro Ala Cys Ala Gly Cys
             20   25   30

<210> 6
<211> 30
<212> PRT
<213> Yersinia enterocolitica

<400> 6
Lys Ala Cys Asp Thr Gln Thr Pro Ser Pro Ser Glu Glu Asn Asp Asp
 1   5   10   15
Trp Cys Cys Glu Val Cys Cys Asn Pro Ala Cys Ala Gly Cys
             20   25   30

<210> 7
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<212> PRT
<213> Yersinia enterocolitica

<400> 7
Gln Glu Thr Ala Ser Gly Gln Val Gly Asp Val Ser Ser Ser Thr Ile
 1   5   10   15
Ala Thr Glu Val Ser Glu Ala Glu Cys Gly Thr Gln Ser Ala Thr Thr
             20   25   30
Gln Gly Glu Asn Asp Trp Asp Trp Cys Cys Glu Leu Cys Cys Asn Pro
         35   40   45
Ala Cys Phe Gly Cys
         50

<210> 8

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<212> PRT
<213> Yersinia kristensenii

<400> 8
Ser Asp Trp Cys Cys Glu Val Cys Cys Asn Pro Ala Cys Ala Gly Cys
 1               5                  10                  15

<210> 9
<211> 17
<212> PRT
<213> Vibrio cholerae

<400> 9
Ile Asp Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Phe Gly Cys Leu
 1               5                  10                  15
Asn

<210> 10
<211> 17
<212> PRT
<213> Vibrio mimicus

<400> 10
Ile Asp Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Phe Gly Cys Leu
 1               5                  10                  15
Asn

<210> 11
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<212> PRT
<213> Escherichia coli

<400> 11
Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Ala Pro
 1               5                  10                  15
Cys Tyr

<210> 12
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<212> PRT
<213> Vibrio cholerae

<400> 12
Ile Asp Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Phe
 1               5                  10

<210> 13
<211> 14
<212> PRT
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<400> 13
Ile Asp Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Phe Gly
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1   5   10

<210> 14
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<213> Vibrio mimicus

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Ile Asp Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Phe Gly Cys Leu
 1   5   10   15
Asn

<210> 15
<211> 17
<212> PRT
<213> Vibrio mimicus

<400> 15
Ile Asp Arg Cys Glu Ile Cys Cys Asn Pro Ala Cys Phe Gly Cys Leu
 1   5   10   15
Asn

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<213> Yersinia enterocolitica

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Asp Trp Asp Cys Cys Asp Val Cys Cys Asn Pro Ala Cys Ala Gly Cys
 1   5   10   15

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<213> Yersinia enterocolitica

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Asp Trp Asp Cys Cys Asp Val Cys Cys Asn Pro Ala Cys Ala Gly Cys
 1   5   10   15

<210> 18
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<400> 18
Asn Asp Asp Trp Cys Cys Glu Val Cys Cys Asn Pro Ala Cys Ala Gly
 1   5   10   15
Cys

<210> 19
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Trp Asp Trp Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Phe Gly Cys
 1               5                   10                  15


<210> 20
<211> 72
<212> PRT
<213> Escherichia coli


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Met Lys Lys Leu Met Leu Ala Ile Phe Ile Ser Val Leu Ser Phe Pro
 1               5                   10                  15
Ser Phe Ser Gln Ser Thr Glu Ser Leu Asp Ser Ser Lys Glu Lys Ile
            20                  25                  30
Thr Leu Glu Thr Lys Lys Cys Asp Val Val Lys Asn Asn Ser Glu Lys
        35                  40                  45
Lys Ser Glu Asn Met Asn Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys
        50                  55                  60
Asn Pro Ala Cys Ala Gly Cys Tyr
65                  70


<210> 21
<211> 72
<212> PRT
<213> Escherichia coli


<400> 21
Met Lys Lys Ser Ile Leu Phe Ile Phe Leu Ser Val Leu Ser Phe Ser
 1               5                   10                  15
Pro Phe Ala Gln Asp Ala Lys Pro Val Glu Ser Ser Lys Glu Lys Ile
            20                  25                  30
Thr Leu Glu Ser Lys Lys Cys Asn Ile Ala Lys Lys Ser Asn Lys Ser
        35                  40                  45
Gly Pro Glu Ser Met Asn Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys
        50                  55                  60
Asn Pro Ala Cys Thr Gly Cys Tyr
65                  70


<210> 22
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<212> PRT
<213> Yersinia enterocolitica


<400> 22
Met Lys Lys Ile Val Phe Val Leu Val Leu Met Leu Ser Ser Phe Gly
 1               5                   10                  15
Ala Phe Gly Gln Glu Thr Val Ser Gly Gln Phe Ser Asp Ala Leu Ser
            20                  25                  30
Thr Pro Ile Thr Ala Glu Val Tyr Lys Gln Ala Cys Asp Pro Pro Leu
        35                  40                  45
Pro Pro Ala Glu Val Ser Ser Asp Trp Asp Cys Cys Asp Val Cys Cys
        50                  55                  60
Asn Pro Ala Cys Ala Gly Cys
65                  70


<210> 23
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<211> 54
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated amino terminal leader
      sequence

<400> 23
Met Lys Lys Ser Ile Leu Phe Ile Phe Leu Ser Val Leu Ser Phe Ser
1   5   10   15
Pro Phe Ala Gln Asp Ala Lys Pro Val Glu Ser Ser Lys Glu Lys Ile
            20   25   30
Thr Leu Glu Ser Lys Lys Cys Asn Ile Ala Lys Lys Ser Asn Lys Ser
        35   40   45
Gly Pro Glu Ser Met Asn
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<210> 24
<211> 53
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 24
Met Lys Lys Ser Ile Leu Phe Ile Phe Leu Ser Val Leu Ser Phe Ser
1   5   10   15
Pro Phe Ala Gln Asp Ala Lys Pro Ala Gly Ser Ser Lys Glu Lys Ile
            20   25   30
Thr Leu Glu Ser Lys Lys Cys Asn Ile Val Lys Lys Ser Asn Lys Ser
        35   40   45
Gly Pro Glu Ser Met
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<210> 25
<211> 53
<212> PRT
<213> Escherichia coli

<400> 25
Met Lys Lys Ser Ile Leu Phe Ile Phe Leu Ser Val Leu Ser Phe Ser
1   5   10   15
Pro Phe Ala Gln Asp Ala Lys Pro Ala Gly Ser Ser Lys Glu Lys Ile
            20   25   30
Thr Leu Glu Ser Lys Lys Cys Asn Ile Val Lys Lys Asn Asn Glu Ser
        35   40   45
Ser Pro Glu Ser Met
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<210> 26
<211> 19
<212> PRT
<213> Artificial Sequence

<220>

<223> Syntheticaly generated peptide

<400> 26
Asn Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 27
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Syntheticaly generated peptide

<400> 27
Asn Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Trp
 1   5   10   15
Gly Cys Tyr

<210> 28
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Syntheticaly generated peptide

<400> 28
Asn Ser Ser Asn Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 29
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Syntheticaly generated peptide

<400> 29
Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

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<220>
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<400> 30

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Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Trp Gly Cys Tyr
1               5                   10
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<212> PRT
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<400> 31
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Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
1               5                   10
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<212> PRT
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<400> 32
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Asn Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
1               5                   10                  15
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<210> 33
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<400> 33
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Asn Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Trp Gly Cys Tyr
1               5                   10                  15
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<213> Artificial Sequence

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<400> 34
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Asn Cys Cys Glu Phe Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
1               5                   10                  15
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<211> 15
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<220>

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<400> 35
Asn Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10   15

<210> 36
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<212> PRT
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<220>
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<400> 36
Asn Cys Cys Glu Trp Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10   15

<210> 37
<211> 15
<212> PRT
<213> Artificial Sequence

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<400> 37
Asn Cys Cys Glu Arg Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10   15

<210> 38
<211> 15
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Asn Cys Cys Glu Lys Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10   15

<210> 39
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<212> PRT
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<400> 39
Asn Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr Asp Phe
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<210> 40

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<211> 21
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<400> 40
Asn Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Trp
 1               5                  10                  15
Gly Cys Tyr Asp Phe
            20


<210> 41
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
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<400> 41
Asn Ser Ser Asn Tyr Cys Cys Glu Phe Cys Cys Asn Pro Ala Cys Thr
 1               5                  10                  15
Gly Cys Tyr Asp Phe
            20


<210> 42
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
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<400> 42
Asn Ser Ser Asn Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
 1               5                  10                  15
Gly Cys Tyr Asp Phe
            20


<210> 43
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<212> PRT
<213> Artificial Sequence

<220>
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<400> 43
Asn Ser Ser Asn Tyr Cys Cys Glu Trp Cys Cys Asn Pro Ala Cys Thr
 1               5                  10                  15
Gly Cys Tyr Asp Phe
            20


<210> 44
<211> 21
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<212> PRT
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<220>
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<400> 44
Asn Ser Ser Asn Tyr Cys Cys Glu Arg Cys Cys Asn Pro Ala Cys Thr
 1               5                   10                  15
Gly Cys Tyr Asp Phe
            20


<210> 45
<211> 21
<212> PRT
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<400> 45
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 1               5                   10                  15
Gly Cys Tyr Asp Phe
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<210> 46
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
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<400> 46
Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp Phe
 1               5                   10                  15


<210> 47
<211> 16
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<220>
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<400> 47
Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Trp Gly Cys Tyr Asp Phe
 1               5                   10                  15


<210> 48
<211> 16
<212> PRT
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<220>
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<400> 48
Cys Cys Glu Phe Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp Phe
1   5   10   15

<210> 49
<211> 16
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<400> 49
Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp Phe
1   5   10   15

<210> 50
<211> 16
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<213> Artificial Sequence

<220>
<223> Syntheticaly generated peptide

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Cys Cys Glu Trp Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp Phe
1   5   10   15

<210> 51
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Cys Cys Glu Arg Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp Phe
1   5   10   15

<210> 52
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Cys Cys Glu Lys Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp Phe
1   5   10   15

<210> 53
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 53
Asn Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp
 1   5   10   15
Phe

<210> 54
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 54
Asn Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Trp Gly Cys Tyr Asp
 1   5   10   15
Phe

<210> 55
<211> 17
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<220>
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 1   5   10   15
Phe

<210> 56
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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Asn Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp
 1   5   10   15
Phe

<210> 57
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 57
Asn Cys Cys Glu Trp Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp
 1   5   10   15
Phe

<210> 58
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 58
Asn Cys Cys Glu Arg Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp
 1   5   10   15
Phe

<210> 59
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Syntheticaly generated peptide

<400> 59
Asn Cys Cys Glu Lys Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr Asp
 1   5   10   15
Phe

<210> 60
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetically generated oligonucleotide

<400> 60
cacaccatat gaagaaatca atattattta tttttctttc tg   42

<210> 61
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetically generated oligonucleotide

<400> 61

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cacacctcga gttaggtctc catgctttca ggaccacttt tattac                    46
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<210> 62
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetically generated oligonucleotide

<400> 62
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gcatgaatag tagcaattac tgctgtgaat tgtgttgtaa tcctgcttgt accgggtgct     60
attaataac                                                             69
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<210> 63
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetically generated oligonucleotide

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tcgagttatt aatagcaccc ggtacaagca ggattacaac acaattcaca gcagtaattg     60
ctactattc                                                             69
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<210> 64
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetically generated oligonucleotide

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gcatgaatag tagcaattac tgctgtgaat attgttgtaa tcctgcttgt accgggtgct     60
attaataac                                                             69
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<210> 65
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetically generated oligonucleotide

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tcgagttatt aatagcaccc ggtacaagca ggattacaac aatattcaca gcagtaattg     60
ctactattc                                                             69
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<210> 66
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

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<221> VARIANT
<222> 9
<223> Xaa = any amino acid; or Xaa = any amino acid
      other than Leu; or Xaa = Phe, Trp, and Tyr; or
      selected from from any other natural or
      non-natural aromatic amino acid; or Xaa = Tyr


<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa1 = Asn, Xaa2 = Ser, Xaa3 = Ser, Xaa4 = Asn,
      Xaa5 = Tyr;  or Xaa1-Xaa5 is missing; or Xaa1-Xaa4
      is missing; or Xaa1 -Xaa3 is missing; or Xaa1 and
      Xaa2 is missing; or Xaa1 is missing


<221> VARIANT
<222> 19, 20, 21
<223> Xaa 20 = Asp, Xaa21 = Phe or missing; or Xaa20 =
      Asn or Glu and Xaa21 is missing; or X19-Xaa21 is
      missing


<221> VARIANT
<222> (1)...(21)
<223> Xaa = Any Amino Acid


<400> 66
Xaa Xaa Xaa Xaa Xaa Cys Cys Glu Xaa Cys Cys Asn Pro Ala Cys Thr
 1               5                10                      15
Gly Cys Tyr Xaa Xaa
            20


<210> 67
<211> 19
<212> PRT
<213> Artificial Sequence


<220>
<223> Synthetically generated peptide


<400> 67
Gln Ser Ser Asn Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
 1               5                10                      15
Gly Cys Tyr


<210> 68
<211> 19
<212> PRT
<213> Artificial Sequence


<220>
<223> Synthetically generated peptide


<400> 68
Asn Thr Ser Asn Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
 1               5                10                      15
Gly Cys Tyr
```

<210> 69
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 69
Asn Leu Ser Asn Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
1   5   10   15
Gly Cys Tyr

<210> 70
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 70
Asn Ile Ser Asn Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
1   5   10   15
Gly Cys Tyr

<210> 71
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 71
Asn Ser Ser Gln Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
1   5   10   15
Gly Cys Tyr

<210> 72
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 72
Ser Ser Asn Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr Gly
1   5   10   15
Cys Tyr

<210> 73
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 73
Gln Ser Ser Gln Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr
1   5   10   15
Gly Cys Tyr

<210> 74
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 74
Ser Ser Gln Tyr Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr Gly
1   5   10   15
Cys Tyr

<210> 75
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 75
Asn Ser Ser Asn Tyr Cys Cys Glu Ala Cys Cys Asn Pro Ala Cys Thr
1   5   10   15
Gly Cys Tyr

<210> 76
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 76
Asn Ser Ser Asn Tyr Cys Cys Glu Arg Cys Cys Asn Pro Ala Cys Thr
1   5   10   15
Gly Cys Tyr

```
<210> 77
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 77
Asn Ser Ser Asn Tyr Cys Cys Glu Asn Cys Cys Asn Pro Ala Cys Thr
 1               5                   10                  15
Gly Cys Tyr


<210> 78
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 78
Asn Ser Ser Asn Tyr Cys Cys Glu Asp Cys Cys Asn Pro Ala Cys Thr
 1               5                   10                  15
Gly Cys Tyr


<210> 79
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 79
Asn Ser Ser Asn Tyr Cys Cys Glu Cys Cys Cys Asn Pro Ala Cys Thr
 1               5                   10                  15
Gly Cys Tyr


<210> 80
<211> 19
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<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 80
Asn Ser Ser Asn Tyr Cys Cys Glu Gln Cys Cys Asn Pro Ala Cys Thr
 1               5                   10                  15
Gly Cys Tyr


<210> 81
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<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 81
Asn Ser Ser Asn Tyr Cys Cys Glu Glu Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 82
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
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<400> 82
Asn Ser Ser Asn Tyr Cys Cys Glu Gly Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 83
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 83
Asn Ser Ser Asn Tyr Cys Cys Glu His Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 84
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 84
Asn Ser Ser Asn Tyr Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 85
<211> 19

<212> PRT
<213> Artificial, Sequence

<220>
<223> Synthetically generated peptide

<400> 85
Asn Ser Ser Asn Tyr Cys Cys Glu Lys Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 86
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 86
Asn Ser Ser Asn Tyr Cys Cys Glu Met Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 87
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 87
Asn Ser Ser Asn Tyr Cys Cys Glu Phe Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 88
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 88
Asn Ser Ser Asn Tyr Cys Cys Glu Pro Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 89
<211> 19
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 89
Asn Ser Ser Asn Tyr Cys Cys Glu Ser Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 90
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 90
Asn Ser Ser Asn Tyr Cys Cys Glu Thr Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 91
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 91
Asn Ser Ser Asn Tyr Cys Cys Glu Trp Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 92
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 92
Asn Ser Ser Asn Tyr Cys Cys Glu Val Cys Cys Asn Pro Ala Cys Thr
 1   5   10   15
Gly Cys Tyr

<210> 93
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 93
Cys Cys Glu Ala Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 94
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 94
Cys Cys Glu Arg Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 95
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 95
Cys Cys Glu Asn Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 96
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 96
Cys Cys Glu Asp Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 97
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 97
Cys Cys Glu Cys Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 98

<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 98
Cys Cys Glu Gln Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 99
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 99
Cys Cys Glu Glu Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 100
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 100
Cys Cys Glu Gly Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 101
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 101
Cys Cys Glu His Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 102
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 102
Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr

```
<210> 103
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 103
Cys Cys Glu Lys Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1               5                   10


<210> 104
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 104
Cys Cys Glu Met Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1               5                   10


<210> 105
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 105
Cys Cys Glu Phe Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1               5                   10


<210> 106
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 106
Cys Cys Glu Pro Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1               5                   10


<210> 107
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide
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<400> 107
Cys Cys Glu Ser Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 108
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 108
Cys Cys Glu Thr Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 109
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 109
Cys Cys Glu Trp Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 110
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 110
Cys Cys Glu Val Cys Cys Asn Pro Ala Cys Thr Gly Cys Tyr
 1   5   10

<210> 111
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 111
Gln His Asn Pro Arg
 1   5

<210> 112
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 112
Val Gln His Asn Pro Arg
 1   5

<210> 113
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 113
Val Arg Gln His Asn Pro Arg
 1   5

<210> 114
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 114
Val Arg Gly Gln His Asn Pro Arg
 1   5

<210> 115
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 115
Val Arg Gly Pro Gln His Asn Pro Arg
 1   5

<210> 116
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 116
Val Arg Gly Pro Arg Gln His Asn Pro Arg
 1   5   10

<210> 117

```
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 117
Val Arg Gly Pro Arg Arg Gln His Asn Pro Arg
 1               5                   10

<210> 118
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 118
Arg Gln His Asn Pro Arg
 1               5

<210> 119
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<221> VARIANT
<222> 1, 2, 3, 4
<223> Xaa = missing

<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa = Xaa1 = Asn, Xaa2 =  Ser, Xaa3 = Ser, Xaa4 =
      Asn, Xaa5 = Tyr; or is missing

<221> VARIANT
<222> 8, 9, 12, 13, 14, 17, 19
<223> Xaa = any amino acid

<400> 119
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Xaa Xaa Xaa Cys Xaa
 1               5                   10                  15
Xaa Cys Xaa Xaa Xaa
            20

<210> 120
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide
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<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa1 = Asn, Xaa2 = Ser, Xaa3 = Ser, Xaa4 = Asn,
      Xaa5 = Tyr or missing; or Xaa1- Xaa4 is missing
      and Xaa5 = Asn

<221> VARIANT
<222> 8
<223> Xaa = Glu or Asp

<221> VARIANT
<222> 9
<223> Xaa = Leu, Ile, Val, Trp, Tyr or Phe

<221> VARIANT
<222> 16
<223> Xaa =  Thr, Ala, or Trp

<221> VARIANT
<222> 19
<223> Xaa = Trp, Tyr, Or Leu or is missing

<221> VARIANT
<222> 20, 21
<223> Xaa = Asp, Phe

<400> 120
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Asn Pro Ala Cys Xaa
 1               5                   10                  15
Gly Cys Xaa Xaa Xaa
            20


<210> 121
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 121
Asn Ser Ser Asn Tyr
 1               5

<210> 122
<211> 30
<212> PRT
<213> Yersinia enterocolitica

<400> 122
Gln Ala Cys Asp Pro Pro Leu Pro Pro Ala Glu Val Ser Ser Asp Trp
 1               5                   10                  15
Asp Cys Cys Asp Val Cys Cys Asn Pro Ala Cys Ala Gly Cys
            20                  25                  30
```

```
<210> 123
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 123
Lys Lys Lys Lys Lys Lys
 1               5


<210> 124
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 124
Asp Lys Lys Lys Lys Lys Lys
 1               5


<210> 125
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated  peptide

<400> 125
Cys Cys Glu Tyr Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5                   10


<210> 126
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated  peptide

<400> 126
Cys Cys Glu Ala Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5                   10


<210> 127
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated  peptide

<400> 127
```

```
Cys Cys Glu Arg Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5               10
```

<210> 128
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 128
```
Cys Cys Glu Asn Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5               10
```

<210> 129
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 129
```
Cys Cys Glu Asp Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5               10
```

<210> 130
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 130
```
Cys Cys Glu Cys Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5               10
```

<210> 131
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 131
```
Cys Cys Glu Gln Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5               10
```

<210> 132
<211> 13
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetically generated peptide

<400> 132
Cys Cys Glu Glu Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 133
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 133
Cys Cys Glu Gly Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 134
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 134
Cys Cys Glu His Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 135
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 135
Cys Cys Glu Ile Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 136
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 136
Cys Cys Glu Lys Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 137
<211> 13
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 137
Cys Cys Glu Met Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 138
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 138
Cys Cys Glu Phe Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 139
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 139
Cys Cys Glu Pro Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 140
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 140
Cys Cys Glu Ser Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

<210> 141
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<400> 141
Cys Cys Glu Thr Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1   5   10

```
<210> 142
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated  peptide

<400> 142
Cys Cys Glu Trp Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5                   10

<210> 143
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated  peptide

<400> 143
Cys Cys Glu Val Cys Cys Asn Pro Ala Cys Thr Gly Cys
 1               5                   10

<210> 144
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa is missing

<221> VARIANT
<222> 8
<223> Xaa = Glu

<221> VARIANT
<222> 9
<223> Xaa = Leu, Ile, Lys, Arg, Trp, Tyr or Phe

<221> VARIANT
<222> 12
<223> Xaa = Asn

<221> VARIANT
<222> 13
<223> Xaa = Pro

<221> VARIANT
<222> 14
<223> Xaa = Ala

<221> VARIANT
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```
<222> 16
<223> Xaa = Thr, Ala, Lys, Arg, Trp

<221> VARIANT
<222> 17
<223> Xaa = Gly

<221> VARIANT
<222> 19
<223> Xaa = Tyr or Leu

<221> VARIANT
<222> 20, 21
<223> Xaa20 = Asp; Xaa21 = Phe, or missing

<400> 144
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Xaa Xaa Xaa Cys Xaa
 1               5                   10                      15
Xaa Cys Xaa Xaa Xaa

<210> 145
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa1= Asn, Xaa2 = Ser, Xaa3 = Ser, Xaa4 = Asn,
      Xaa5 = Tyr; or mising

<221> VARIANT
<222> 1, 2, 3, 4
<223> Xaa = missing

<221> VARIANT
<222> 5
<223> Xaa = Asn, Trp, Tyr, Asp, Ile, Thr or Phe

<221> VARIANT
<222> 8
<223> Xaa = Glu, Asp, Gln, Gly or Pro

<221> VARIANT
<222> 9
<223> Xaa = Leu, Ile, Val, Ala, Lys, Arg, Trp, Tyr or
      Phe

<221> VARIANT
<222> 12
<223> Xaa = Asn, Tyr, Asp or Ala

<221> VARIANT
<222> 13
<223> Xaa = Pro or Gly
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<221> VARIANT
<222> 14
<223> Xaa = Ala, Leu, Ser, Gly, Val, Glu, Gln, Ile, Leu,
      Lys, Arg, and Asp

<221> VARIANT
<222> 16
<223> Xaa = Thr, Ala, Asn, Lys, Arg

<221> VARIANT
<222> 17
<223> Xaa = Gly, Pro or Ala

<221> VARIANT
<222> 19
<223> Xaa = Trp, Tyr, Phe or Leu

<221> VARIANT
<222> 19-21
<223> Xaa = Asp, Phe or missing; or Xaa20 =
      Asn, or Glu and Xaa21 is missing; or Xaa19, Xaa20,
      Xaa21 = is missing

<400> 145
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Xaa Xaa Xaa Cys Xaa
 1                   5                   10                  15
Xaa Cys Xaa Xaa Xaa
            20

<210> 146
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa = missing

<221> VARIANT
<222> 8
<223> Xaa = Glu

<221> VARIANT
<222> 9
<223> Xaa = Leu, Ile, Lys, Arg, Trp, Tyr, or Phe

<221> VARIANT
<222> 12
<223> Xaa = Asn

<221> VARIANT
<222> 13
<223> Xaa = Pro
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```
<221> VARIANT
<222> 14
<223> Xaa = Ala

<221> VARIANT
<222> 16
<223> Xaa = Thr, Ala, Lys, Arg, Trp ; or X16 = any amino
      acid; or X16 = Thr, Ala, Lys, Arg, Trp; or any
      non-aromatic amino acid

<221> VARIANT
<222> 17
<223> Xaa = Gly

<221> VARIANT
<222> 19
<223> Xaa = Tyr or Leu

<221> VARIANT
<222> 20, 21
<223> Xaa20 = Asp, Xaa21 = Phe or missing

<400> 146
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Xaa Xaa Xaa Cys Xaa
 1                   5                   10                  15
Xaa Cys Xaa Xaa Xaa
            20


<210> 147
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa = Xaa1 = Asn, Xaa2 = Ser, Xaa3 = Ser, Xaa4 =
      Asn, Xaa5 = Tyr, or is missing; or Xaa1- Xaa4 is
      mising and Xaa5 = Asn, Trp, Tyr, Asp, Ile, Thr

<221> VARIANT
<222> 8
<223> Xaa = Glu, Asp, Gln, Gly or Pro

<221> VARIANT
<222> 9
<223> Xaa = Leu, Ile, Val, Ala, Lys, Arg, Trp, Tyr or
      Phe

<221> VARIANT
<222> 12
<223> Xaa = Asn, Tyr, Asp or Ala

<221> VARIANT
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```
<222> 13
<223> Xaa = Pro or Gly


<221> VARIANT
<222> 14
<223> Xaa = Ala, Leu, Ser, Gly, Val, Glu, Gln, Ile, Leu,
      Lys, Arg or Asp


<221> VARIANT
<222> 16
<223> Xaa = Thr, Ala, Asn, Lys, Arg, Trp


<221> VARIANT
<222> 17
<223> Xaa = Gly, Pro or Ala


<221> VARIANT
<222> 19
<223> Xaa = Trp, Tyr, Phe or Leu; or Xaa = Lys or Arg


<221> VARIANT
<222> 20
<223> Xaa = Asp, Phe or missing; or
      Xaa20 = Asn or Glu and Xaa21 is missing


<221> VARIANT
<222> 19, 21
<223> Xaa  is miising


<400> 147
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Xaa Xaa Xaa Cys Xaa
 1               5                   10                  15
Xaa Cys Xaa Xaa Xaa
            20


<210> 148
<211> 21
<212> PRT
<213> Artificial Sequence


<220>
<223> Synthetically generated peptide


<221> VARIANT
<222> 1, 2, 3, 4, 5
<223> Xaa is missing


<221> VARIANT
<222> 8
<223> Xaa = Glu


<221> VARIANT
<222> 9
<223> Xaa = Leu, Ile, Lys, Arg, Trp, Tyr or Phe


<221> VARIANT
<222> 12
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<223> Xaa = Asn

<221> VARIANT
<222> 13
<223> Xaa = Pro

<221> VARIANT
<222> 14
<223> Xaa = Ala

<221> VARIANT
<222> 16
<223> Xaa = Thr, Ala, Lys, Arg, Trp

<221> VARIANT
<222> 17
<223> Xaa = Gly

<221> VARIANT
<222> 19
<223> Xaa = Tyr or Leu; or Xaa = Lys or Arg

<221> VARIANT
<222> 20, 21
<223> Xaa = Asp, Phe or is missing

<400> 148
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Xaa Xaa Xaa Cys Xaa
 1               5                   10                  15
Xaa Cys Xaa Xaa Xaa
            20

<210> 149
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetically generated peptide

<221> VARIANT
<222> 1, 2, 3, 4
<223> Xaa = is missing

<221> VARIANT
<222> 5
<223> Xaa = Asn

<221> VARIANT
<222> 9
<223> Xaa = Trp, Tyr or Phe;

<221> VARIANT
<222> 16
<223> Xaa = Thr or Ala

<221> VARIANT
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<222> 19
<223> Xaa = Trp, Tyr, Phe

<221> VARIANT
<222> 20, 21
<223> Xaa = Asp, Phe

<400> 149
Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Cys Cys Asn Pro Ala Cys Xaa
 1               5                   10                  15
Gly Cys Xaa Xaa Xaa
            20
```